

Original Research Article

MIND OVER MATTERS: PREVALENCE OF DEPRESSION AND ANXIETY IN POLYCYSTIC OVARIAN SYNDROME (PCOS)

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ABSTRACT

Background: Polycystic Ovarian Syndrome, is a disorder that impacts various aspects of health. One such less-explored angle is the mental health issues faced by these individuals. This study explores the prevalence and severity of Anxiety and Depression among women with PCOS.

Materials and Methods: This is a cross-sectional comparative study on women diagnosed with PCOS, to evaluate the depression and anxiety symptoms using PHQ 9 and HAM A.

Results: 27% of the PCOS population fell in the category of mild depression, 20%, 22%, 21% had moderate, moderately severe and severe depression respectively. On the other hand, 50% belong to the mild severity (≤ 17) on the HAM-A scale. 23%, 11%, and 16% suffered from mild to moderate, moderate to severe and severe anxiety respectively. Most (72%) of patients are 21-25 years old. The study's participants are mostly unmarried (83%) and residents of urban areas (89%). Among the population studied the undergraduates contributed the highest (75%) and maximum (76%) showed no link with family history. The body mass index of these patients varied from <17 to ≥ 30.0 in the following percentages- 3% (thin), 37% (normal weight), 22% (Overweight), and 33% (Obese). 47% of females reported the duration since diagnosis to be between 1-5 years.

Conclusion: A significant number of patients with PCOS had co morbid anxiety and depression. Awareness about the prevalence of Anxiety and Depression in patients with PCOD would help in early detection and better management of psychiatric wellbeing.

Keywords: Polycystic Ovarian Syndrome, Anxiety, Depression, Hamilton Anxiety Rating Scale.

INTRODUCTION

Stein-Leventhal syndrome or polycystic ovarian syndrome (PCOS/PCOD) is a heterogeneous, multisystem endocrinopathy in women of reproductive age with the ovarian expression of various metabolic disturbances and a wide spectrum of clinical features such as obesity, menstrual abnormalities, and hyperandrogenism. Women consult Gynecologists regarding menstrual cycle disorders; primary care providers and internists for hyperlipidemia, insulin resistance, and possibly hypertension; dermatologists for hair and skin

concerns; and psychiatric providers for treatment of depression and body image disturbances.^[1] The clinical manifestations of hyperandrogenism and menstrual abnormalities may compound negative views and lower self-esteem and negatively impact mood. Many of these women also struggle with infertility, and due to the added external pressures like societal beliefs and culture, they may be further negatively impacted and worsen their depressive symptoms.^[2] It has been proposed to be associated with several mental health problems, including anxiety, depression, diminished sexual satisfaction, and lowered health-related quality of life.^[3] The

increased prevalence of PCOS among the general population throughout the world is found to be 5%–10% in women of reproductive age, and about 40% of women with PCOS experience depression, particularly young girls.

In a study, it was found that for more than half of those disorders, the women with PCOS had distress levels statistically similar to those of the female psychiatric patients. (4) PCOS was shown to have an independent effect on psychological distress, whereas high BMI or biochemical hyperandrogenism were not significant contributors for more prevalent anxiety or depression symptoms.^[5] There was a high-level mediation effect of stress between PCOS and both depression and anxiety.^[6]

Depression and anxiety are common in women with PCOS but are often overlooked and therefore left untreated. Along with the physical disturbances, many mental problems are also associated with PCOS. Because of the increased number of cases of PCOS around the world in present times, with prominent symptoms of, specifically, depression at the adolescent stage, it is important to highlight the disease.^[7]

The present study was undertaken to assess these psychological factors, depression and anxiety among the already diagnosed PCOS individuals in the age group of 15-30 years. The previously documented studies have highlighted these issues by comparing the PCOS study subject to normal individuals, the current study aimed to find out the prevalence of these psychiatric problems among PCOS individuals. The inference of the study is useful in understanding the psychiatric issues of the majority and taking beneficial steps for the prevention and treatment of depression and anxiety in diagnosed individuals.

MATERIALS AND METHODS

The study design involved a cross-sectional comparative study with the help of the Patient Health Questionnaire (PHQ-9)⁽⁸⁾ and Hamilton Anxiety Rating Scale⁽⁹⁾ to determine Depression and Anxiety among PCOS-affected individuals respectively among the already diagnosed patients of PCOS at Bhaskar Medical College, Moinabad, Telangana.

Sample Size: 100 Adolescent girls and adult women affected with PCOS, aged 15-30 years coming to Bhaskar General Hospital.

Inclusion Criteria

- Women between 15-30 years of age
- Participants who give consent for the study.
- Diagnosed by the Gynecologist as patients of PCOS.

Exclusion Criteria

- Women with other organic brain disorders, a history of psychoactive substance use or with

other known medical conditions other than PCOS.

- Women with pregnancy as they may have pregnancy related psychological issues.
- Women in postpartum till 1 year.

Institutional ethics committee approved the study. The consented patients were briefed about the study and were evaluated by a questionnaire of the anxiety and depression scales. As the study was anonymous, no bias was shown during the evaluation. The data was collected in 6 months period, from February to July 2024.

Section I: A semi-structured questionnaire of the proforma contained 9 questions relevant to *socio-demographic data* about the informants' age, marital status, background, profession, height, weight, family history and duration since their diagnosis of PCOS. The participant had to write down a few details and had to tick in a few questions.

Section II was the *Patient Health Questionnaire (PHQ-9)*⁽⁸⁾ for assessing depression in an individual. This questionnaire had 9 questions. The participant was to answer based on their past 2 weeks' experience. Depression is graded as Minimal Depression (1-4), Mild Depression (5-9), Moderate Depression (10-14), Moderately Severe Depression (15-19), Severe Depression (20-27) based on the scores.

Section III comprised of Hamilton Anxiety Rating Scale⁽⁹⁾ for assessing anxiety among them. Score range is 0–56, where ≤ 17 indicates mild severity, 18-24 mild-moderate severity, 25-30 moderate to severe severity, and >30 represents severe severity.

Statistical Analysis: The data was computed for the ease of grouping them. multiple charts and tables were created using Windows Excel.

RESULTS

As shown in Table 1, the majority (72%) of patients were from the age group 21-25 years. The study's participants were mostly unmarried (83%) and residents of urban areas (89%). Among the population studied Undergraduates contributed the highest (75%) and maximum (76%) showed no link with family history. This indicated that the main contribution was from the young adults of the society who are now exploring the challenges of adulthood. [Table 1]

Body Mass Index which depends on the individual's height and weight showed the following data of scores <17.0 (Thinness) was for 3% of population contributing the least whereas, maximum 37% was made of Normal weight individuals with BMI of 18.5-24.9. Overweight (≥ 25.0 BMI) and Obese (≥ 30.0 BMI) individuals corresponded to 22% and 33% respectively as shown in Figure 1. A reason for the increased BMI of significant individuals can be attributed to the Urban standards of sedentary lifestyle. [Figure 1]

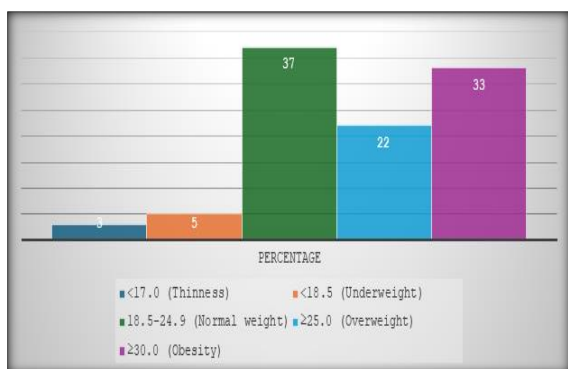


Figure 1: Column distribution of BMI among the study subjects

Figure 2 depicts the duration since the diagnosis of PCOS among the subjects. 47% of females fell in the category of 1-5 years and the rest, 20% and 33% fell in the categories of < 1 year and >5 years respectively. [Figure 2]

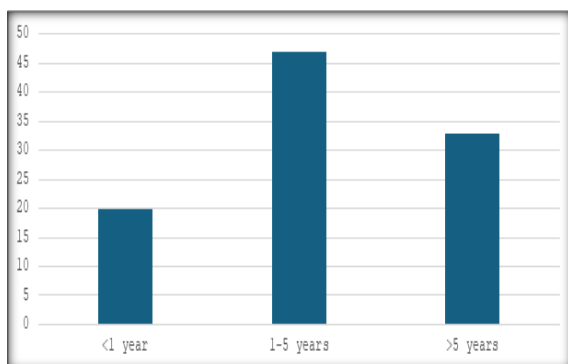


Figure 2: Duration since diagnosis of PCOD

All the 100 patients were studied using the PHQ-9 (Patient Health Questionnaire), a reliable and valid measure of depression severity, and HAM-A (Hamilton Anxiety Rating Scale) a clinical-based questionnaire for Anxiety evaluation.

PHQ-9 reveals a prevalence of Minimal Depression (1-4) in 10% of them. 27% fall in the category of mild depression with a score of 5-9 on the PHQ-9 scale. The rest 20%, 22%, and 21% are dealing with Moderate (10-14), moderately severe (15-19), and severe depression (20-27) respectively as shown in the clustered chart below. [Figure 3] Similar percentages in moderate, moderately severe and

severe depression which sums up to more than half the percentage of individuals, indicate the higher prevalence of depression and alarm the need to get attention for immediate and effective management of it.

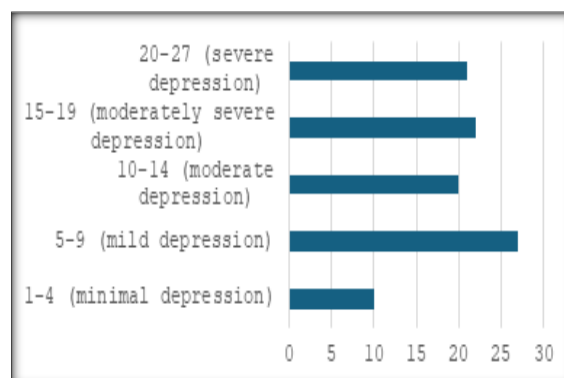


Figure 3: Percentage distribution of the study subjects according to the scoring of the PHQ-9 scale in a clustered chart

According to the HAM-A scoring system, individuals with mild severity (≤ 17) formed half of the population i.e., 50%. 23% attribute to a score of 18-24 with mild to moderate severity. 11% are with a score of 25-30 with moderate to severe severity and the rest 16% are with a score greater than 30 as shown in. [Figure 4]

Comparing the findings of depression and anxiety, anxiety was present in nearly 50% of individuals.

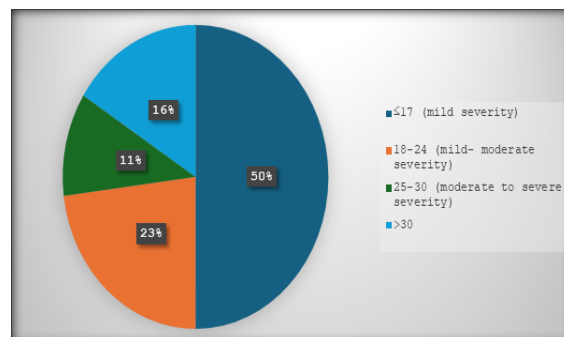


Figure 4: Percentage distribution of study subjects according to HAM-A scale in a pie chart

Table 1: Socio-demographic data

Socio-demographic parameters:	Categories	Percentage (%)
Age	15-20	14
	21-25	72
	26-30	14
Marital status	Married	17
	Unmarried	83
Place distribution	Rural	11
	Urban	89
Educational status	Primary	2
	Secondary	5
	Undergraduate	75
	Postgraduate	18
Family history of PCOS	Yes	9
	No	76

DISCUSSION

This study deals with the prevalence and severity of Depression and Anxiety among PCOD women. In women diagnosed with PCOD, emotional distress could have psychological and/or pathophysiological causes. In this study, initially 128 patients were considered. Final study sample was 100 after inclusion and exclusion criteria were considered. Diagnosed PCOD patients were assessed by a questionnaire to evaluate their level of anxiety and depression. The age of the study population was limited between 15-30 years.

In contrast to a study published where 98.4% of subjects were married,^[10] in this study, the contribution was more from the unmarried population (83%) of the society in which, most of them belonged to the age group 21-25 years.

According to another study published by Rajkumar E et al,^[11] Unmarried women with PCOS in comparison to married women with PCOS are at higher risk of being obese and overweight and are generally more likely to be anxious and depressive during their reproductive ages.

Genetic and epigenetic factors from the family history also influence the development of PCOS in women. Among our participants, a family history of PCOD was not significant for 76% of cases. Though 15% of the individuals are doubtful and 9% have a strong relationship to it. In a study conducted by Kahsar-Miller M, Azziz R,^[12] it was stated that family history can then be considered an important factor in determining the risk of developing PCOS. Their preliminary data indicated that a woman's risk of developing PCOS is approximately 40% if her sister is affected. Researchers have hypothesized that PCOS could be due to the autosomal dominant inheritance of some genes.^[13] Interestingly, evidence from the studies in small cohorts of mono- and dizygotic twin pairs suggested that PCOS is an X-linked polygenic disorder. Moreover, another report estimated that the risk of developing PCOS due to the family inheritance of the PCOS-causing gene was as high as 72%. Another study reports that 58.3% of the subjects confirmed with PCOS have a positive family history of diabetes mellitus. Thus, a higher prevalence could be expected as there is an etiological link between PCOS and insulin resistance and India has been tagged as the diabetic capital of the world.^[14]

Many studies show that there is a strong link between increased BMI and the development of PCOD. In our study, WHO classification of BMI was followed. It was found that 37% of our subjects were of normal BMI. 22% of the total subjects were overweight and 33% were obese. The rest were underweight or thin. According to a study in Nepal, 20.73% of the participants reported being obese or overweight now or sometime in the past.^[15] A study

in India found that 62.5% of the students with PCOS were either obese or overweight.^[16] A study in Pakistan found that 36.3% of the students with PCOS also encountered weight gain.^[17] Another study showed Mean body weight, body fat %, BMI, waist circumference, systolic and diastolic blood pressures, and fasting insulin were significantly higher in the PCOS group when compared with the non-PCOS group.^[17]

Delayed diagnosis due to a lack of knowledge has become an important hurdle for the management and treatment of PCOS. In this research, about half of our participants were diagnosed 1-5 years back. Another study revealed that time to diagnosis was >2 years for one-quarter of women, multiple health professionals were seen before diagnosis and only half of the women surveyed were satisfied with the manner in which they were informed of the diagnosis.^[18] These findings support previous qualitative research in smaller populations and less comprehensive survey-based studies reporting frustration and delays in PCOS diagnosis.^[19] We have previously reported that time to diagnosis is associated with mood disorders and depression can additionally affect motivation for lifestyle change which is a vital component for long-term PCOS management.^[20] Hence, delayed diagnosis may impact both health and quality of life in the short and long term and has been linked to increased anxiety and depression among these patients.^[21]

The present study was conducted to check the prevalence and severity of Depression and Anxiety among these PCOD patients. PHQ-9 scale,^[8] was used for the assessment of Depression and it was found that only 27% of our participants are dealing with mild depression. Similarly, the rest are dealing with moderate, moderately severe, and severe depression. Hardly 10 of them are in the minimal depression group. Polycystic ovary syndrome (PCOS) is associated with high levels of depression, which impacts quality of life and limits self-efficacy. Depression is associated with increased cortisol levels, increased sympathetic nervous system activity, and decreased serotonin in the central nervous system. These features are also associated with insulin resistance. Therefore, on joining the dots, it can be said that PCOD individuals experience depression.

Literature suggests that there is an overlap of clinical symptoms between depression and PCOS. As the symptoms overlap, there is a possibility of common associations between depression, PCOS, and PCOS-associated abnormalities including insulin resistance (IR), obesity, CVD, and androgen excess.^[22] There is a possibility of an inflammatory relationship existing between depression and PCOS. It is also possible that the inflammatory markers in PCOS can cross the blood-brain barrier (BBB) leading to the development of depression. They have also been found to have higher levels of

depression and psychological distress owing to the physical appearance of hyperandrogenism, including obesity, hirsutism, cystic acne, seborrhea, and hair loss, possibly by influencing feminine identity.^[23]

In a case-control study, Women with PCOS had a higher lifetime incidence of depressive episodes, social phobia, and eating disorders than controls. Suicide attempts were seven times more common in the PCOS group than in the controls.^[24] Current as well as lifetime use of antidepressants and anxiolytic drugs were more common in the PCOS group. Another study stated that women with PCOS were at an increased risk for depressive disorders (new cases) compared with controls. The overall risk of depressive disorders in women with PCOS was independent of obesity and infertility.^[25] Compared with the non-depressed PCOS subjects, the depressed PCOS subjects had a higher body mass index (BMI) and evidence of insulin resistance.^[26]

Amanda A Deeks et al,^[27] stated in their study that anxiety existed at higher levels than depression. Anxiety was underdiagnosed, and more women with PCOS who reported infertility were depressed. Other studies by Aditi P Chaudhari et al,^[28] stated that infertility and alopecia were associated with anxiety, while acne was associated with depression.

In the present study, according to the Hamilton Anxiety Rating scale,^[9] we noted that half the population is mildly anxious and among the other half, the majority of them are of mild to moderate severity. In a similar study that used the same scale, it was found that almost all patients were found to have anxiety with 98.4% suffering from mild anxiety.^[11] In a study by Benson et al., 2009,^[29] 34% demonstrated elevated Hospital Anxiety and Depression Scale anxiety scores indicating anxiety. The adverse effects of PCOS pose a risk for long-term anxiety and other psychological conditions. Stress and associated mental issues may also lead to severe anxiety disorders and even suicidal tendencies.^[30]

CONCLUSION

It is associated with being in the age group of 21-25 years having a positive family history of PCOS. More than two-thirds of females with PCOS had depression, anxiety, and stress. Young age was associated with depression and anxiety. Awareness about the prevalence of Anxiety and Depression in patients with PCOD would help in early detection and better management of psychiatric wellbeing.

Limitations

1. Sample size was limited to 100 patients.
2. Age group of the patients was restricted from 15 to 30. So results could not be generalized to all the ages.
3. Other social factors contributing to depression or anxiety were not evaluated.

Conflicts of interest: There are no conflicts of interest

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